

REMARKS

Claims 1-36 stand rejected under 35 USC 112, second paragraph. Main claim 1 has been amended to render the claim definite and overcome the rejection.

Claims 1-3, 5, 7-9, 14, 20-22, 31-32, and 35 stand rejected under 35 USC 102(b) as being anticipated by Brillhart US 5,303,306("Brillhart"). The rejection is respectfully traversed for reasons set forth below.

Claims 37-39, 41-43, 48, 50, 53-65, and 68 stand rejected under 35 USC 102(b) as being anticipated by Shennib US 5,197,332 ("Shennib '332"). The rejection is respectfully traversed for reasons set forth below.

Claims 70-72, 75-78, and 81-82 stand rejected under 35 USC 102(b) as being anticipated by Anderson US 5,721,783 ("Anderson"). The rejection is respectfully traversed for reasons set forth below.

Claims 98-101 stand rejected under 35 USC 102(b) as being anticipated by Downs US 5,428,998 ("Downs"). The rejection is respectfully traversed for reasons set forth below.

Claim 4 stands rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Luethi US 4,918,737 ("Luethi"). The rejection is respectfully traversed for reasons set forth below.

Claims 6 and 10-13 stand rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Downs. The rejection is respectfully traversed for reasons set forth below.

Claims 40 and 44-47 stand rejected under 35 USC 103(a) as being unpatentable over Shennib '332 in view of Downs. The rejection is respectfully traversed for reasons set forth below.

Claim 74 stands rejected under 35 USC 103(a) as being unpatentable over Anderson in view of Downs. The rejection is respectfully traversed for reasons set forth below.

Claim 15 stands rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of King US 4,615,007 ("King"). The rejection is respectfully traversed for reasons set forth below.

Claim 16 stands rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Eckstein US 4,964,304 ("Eckstein"). The rejection is respectfully traversed for reasons set forth below.

Claims 17, 19 and 33-34 stand rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Anderson. The rejection is respectfully traversed for reasons set forth below.

Claims 23-30 stand rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Shennib '332. The rejection is respectfully traversed for reasons set forth below.

Claim 36 stands rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Shennib US 5,425,104 ("Shennib '104"). The rejection is respectfully traversed for reasons set forth below.

Claim 69 stands rejected under 35 USC 103(a) as being unpatentable over Shennib '332 in view of Shennib '104. The rejection is respectfully traversed for reasons set forth below.

Claims 49, 51 and 66-67 stand rejected under 35 USC 103(a) as being unpatentable over Shennib '332/Shennib '104? in view of Anderson. The rejection is not understood since Shennib is referred to but Brillhart's patent is cited. Applicant requests clarification in order to permit preparation of an appropriate response.

Claim 52 stands rejected under 35 USC 103(a) as being unpatentable over Shennib '332/Shennib '104? in view of King and Anderson. The rejection is not understood since Shennib is referred to but Brillhart's patent is cited. Applicant requests clarification in order to permit preparation of an appropriate response.

Claims 73, 83-91 and 93-97 stand rejected under 35 USC 103(a) as being unpatentable over Anderson in view of Eckstein. The rejection is respectfully traversed for reasons set forth below.

Claims 102-109 stand rejected under 35 USC 103(a) as being unpatentable over Downs in view of Shennib '332. The rejection is respectfully traversed for reasons set forth below.

Claim 18 stands rejected under 35 USC 103(a) as being unpatentable over Brillhart in view of Anderson and King. The rejection is respectfully traversed for reasons set forth below.

Claim 92 stands rejected under 35 USC 103(a) as being unpatentable over Anderson in view of Eckstein and further in view of Luethi. The rejection is respectfully traversed for reasons set forth below.

Applicant's invention is directed to a hand-held *personal hearing evaluation device* that includes an audio transducer such as a speaker for presenting acoustic test stimuli to a test subject within the direct sound field range of the device, such as delivery of accurate multi-level

and multi-frequency test stimuli for subjective response by the test subject holding the device, including hearing evaluation of the test subject without or with the wearing of a hearing aid.

A position sensor measures the position of the hand held hearing evaluation device relative to the head or portion of the head of interest of the test subject as he or she is holding the device. Distance is calculated, for example, by measuring the latent period between the transmitted ultrasonic signal and the measured ultrasonic response reflected by the head or the ear, and the acoustic test stimuli produced by the speaker are controlled and regulated based on the position of the device relative to the test individual, so that accurate levels of test stimuli are delivered only upon the proper positioning of the device and irrespective of the exact position of the device, to eliminate position and movement-related errors encountered in conventional sound field audiometry. The test subject or test operator is automatically alerted if the device is incorrectly positioned during a test. The position sensor assures proper positioning of the device for hearing evaluation based on the acoustic test stimuli

The device may be connected to an auxiliary instrument such as a computer or a microprocessor-based audiometer for remotely controlling the device and for automatically registering audible responses by means of a response switch on the device. At least two keys of the device are made available for selecting and presenting at least two stimulus levels, for use by the test subject to check the function of a hearing device worn by the subject. Switches on the device enable selecting one of at least two signal types such as noise and speech, and for selecting at least two frequency bands such as low and high bands.

In contrast, the art of record is characterized by the following.

Brillhart discloses a *hearing aid* controlled by an infrared remote control with volume control keys, and standard and custom sound environment keys that are depressed to transmit new circuit settings to the hearing aid via infrared radiation. Audiologist testing of the patient provides an audiogram, most comfortable loudness level and loudness discomfort level measurements, and a determination of curve shape and loss magnitude is made using template overlays, these data then being stored in the remote control by the audiologist to derive the circuit settings that constitute a baseline set. The baseline set determines the hearing aids functions unless and until modified by the patient by pressing a key on the remote control.

In essence, Brillhart's invention is intended to avoid unnecessary hearing aid complexity

found in prior art hearing aids that store settings in the hearing aid itself, by instead, storing all of the available settings for the hearing aid in the remote control, to allow the user to change settings. When the patient pushes a key on the remote control a computer program overlay in the remote modifies the baseline settings according to the then-current sound environment and sends the new settings to the hearing aid through coded infrared radiation pulses. With all due respect, this does not constitute a personal hearing evaluation device. The hearing aid utterly lacks any semblance of a hearing evaluation capability as disclosed and claimed by applicant.

Shennib '332 discloses a headset-based hearing tester and hearing aid programming instrument constituting a headband-shaped electronic module with a connected acoustic transducer module. The electronic module includes a microcontroller and memory storage for program code and patient data, and is used in conjunction with a hand-held patient response device to permit automatic hearing testing. Audio stimuli including test tones, speech and verbal instructions are retrieved from external memory cards. The instrument is capable of programming a programmable hearing aid through a port for direct wire programming or by means such as inductive coil coupling to a hearing aid equipped with a receiving coil. The instrument provides a so-called "fitting prescription" by computing hearing aid parameters. Here again, there is no teaching or suggestion of a personal hearing evaluator of the type disclosed and claimed by applicant.

Anderson discloses a *hearing aid* that communicates wirelessly *with a remote processor unit* (RPU) capable of enhancing audio signals by receiving sounds from the environment that are detected by a microphone of the hearing aid and delivered over a wireless link to the RPU. The RPU is utilized to avoid a need to place all system capabilities within the hearing aid itself (the earpiece) and thereby, to simple earpiece design. In a sense, the Anderson disclosure may be grouped with the Brillhart disclosure as indicative of purportedly improved hearing aid designs that, in fact, require additional remote apparatus to perform these functions. Here, also, the Anderson disclosure fails to anticipate, teach or suggest applicant's hearing evaluation device or method as disclosed and claimed.

Finally, Downs discloses simplistic infant hearing test apparatus purported to be useful for early detection of hearing problems of infants up to 18 month of age, by which the infant is

subjected to two low level digitally stored test sounds imitating a human voice in the frequency range of about 2000 to 4000 Hz at a distance of about 12 inches, and one considerably higher level sound at a distance of about 3 inches. The concept is simply a qualitative test to ascertain whether the infant responds to any of these sounds with a reflex movement, such as blinking of an eye. This disclosure also lacks anticipation, teaching or suggestion of applicant's device or method.

Despite the deficiencies of the principal references cited by examiner, applicant's main claims 1, 37, 70, 84 and 98 are amended herein to recite position sensing and its unique function to even more clearly define patentable subject matter over the references of record. It is submitted that none of the references either alone or in any rational combination constitute an anticipation of or render applicant's invention obvious as claimed.

Luethi discloses a *hearing aid* designed to be worn in or behind the ear, the hearing aid containing basic electrical and acoustic elements, for use in conjunction with a control device for transmitting control signals to the hearing aid, the control device being integrated in a commonly worn article, such as a wristwatch or a piece of jewelry, to avoid observation of its basic function as a manually operable control signal actuator for generating an electric field to enable control signals to be capacitively transmitted in the form of a pulse sequence to the hearing aid.

King discloses an audiological analyzer in which sound waves are generated by a test pattern generator, and a frequency/level shaper is positioned between the generator and a speaker for determining the level and frequency response of a generated signal. A calibration response curve is obtained and stored in memory, for availability to compensate for attenuation of the signal through a medium in which it is transmitted, so as to ensure proper sound pressure level delivery to the ear. The frequency/level shaper is equipped with equalizers for entering a predetermined response that represents the response of a corrective device such as a hearing aid, to allow the tests to be repeated with adjustment according to the response of the simulated hearing aid.

Eckstein discloses apparatus for transmitting an FM radio signal incorporating an audio test signal to a preselected one of two receivers in the headset of a patient, and for indicating

which of the patient's ears received the test signal to afford the patient complete mobility during the testing procedure.

The combination of these secondary references with the principal references does not appear to have any validity, since the respective devices are intended for different purposes and have different functions. In any event, none of these secondary references cure the deficiencies of the principal art cited by the examiner as references against applicant's claims.

For the foregoing reasons, it is respectfully submitted that the claims as amended herein (and even before the amendments) recite patentable subject matter over the references of record, and that the rejections should be withdrawn. Favorable action is earnestly solicited.

Respectfully submitted,

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